a rotor rotatably supported at an inner peripheral surface of the stator and having a pair of slots formed in a ~~radial~~ circumferential direction of the rotor and extending along the inner periphery of the stator with a predetermined interval,

wherein the pair of slots includes an outer side slot formed at an outer periphery side of the rotor and an inner side slot formed at an inner side of the rotor, both the outer side slot and the inner side slot extend toward the outer peripheral surface of the rotor to form a rotor magnetic pole portion, and wherein a width of an effective magnetic path between the outer periphery of the rotor and the outer side slot is defined based on a width of a stator magnetic pole portion multiplied by a predetermined number in ~~the~~ a range of 0.7 and 1.3.

2. (Cancelled) Claim 2 is canceled without prejudice or disclaimer.

3. (Currently Amended) The synchronous reluctance motor according to claim 1, wherein

a phase number of the synchronous reluctance motor is ~~regarded as~~ m,

a ratio of a number of the stator magnetic pole portions relative to a number of the rotor magnetic pole portions is ~~regarded as~~ n,

a first opening angle is formed by lines connecting a rotational center of the rotor with two cross points, the two cross points ~~formed~~ by the outer periphery of the rotor and a center-line of a magnetic flux path between the outer side slot and the inner side slot,

a second opening angle is formed by ~~another~~ center-lines of ~~the~~ adjacent stator magnetic pole portions in the circumferential ~~directions~~ direction of the stator, and

wherein the first opening angle is determined based on the second opening angle multiplied by ~~a number~~ (n / 2m) and a second predetermined number.

4. (Currently Amended) The synchronous reluctance motor according to claim 3, wherein the second predetermined number is ~~determined to be between~~ in a range of 4.3 and 4.6.

5. (Original) The synchronous reluctance motor according to claim 1, wherein a minimum inter slot distance in the circumferential direction of the rotor is determined based on the stator magnetic pole width multiplied by a ~~third~~ second predetermined number.

6. (Currently Amended) The synchronous reluctance motor according to claim 5, wherein the ~~third~~ second predetermined number is determined to be ~~between~~ in a range of 1 / 3 and 1.

7. (Previously presented) The synchronous reluctance motor according to claim 1, wherein a permanent magnet is disposed in each of the outer side slot and the inner side slot formed in the rotor.

8. (Currently Amended) The synchronous reluctance motor according to claim 7, wherein

the permanent magnet disposed in the outer side slot is regarded as an outer side permanent magnet,

the permanent magnet disposed in the inner side slot is regarded as an inner side permanent magnet,

~~each portion in the inner side permanent magnet and the outer side permanent magnet facing each other in the radial direction is magnetized to be different magnetic pole respectively~~ in the circumferential direction of the rotor, the portions of the inner side permanent magnet and the outer side permanent magnet facing each other are magnetized to have different magnetic poles,

a first total magnetic flux ~~amount~~ of the outer side permanent magnet is determined to be larger than or equal to a second total magnetic flux ~~amount~~ of the inner side permanent magnet when ~~a~~ the center-line of ~~both~~ the outer side slot and the inner side slot in a circumferential direction of the rotor is ~~located in~~adjacent one or more of the ~~another center lines~~ center-lines of the stator magnetic pole ~~portion~~ portions in the circumferential direction of the stator, and when the armature coils winding around the stator magnetic pole portions are not electrically fed.

9. (Currently Amended) The synchronous reluctance motor according to claim 8, wherein the first total magnetic flux ~~amount~~ and the second total magnetic flux ~~amount~~ are determined by changing shapes and sizes of the outer side permanent magnets and the inner side permanent magnets depending on locations thereof in the radial direction of the rotor.

10. (Currently Amended) The synchronous reluctance motor according to claim 8, wherein the outer side permanent magnets and the inner side permanent magnets are constructed of ~~more than one unit~~ a plurality of permanent magnets uniformly formed in size and shape, the first total magnetic flux ~~amount~~ and second total magnetic flux ~~amount are~~ being

determined by changing the number of unit permanent magnets disposed in the outer side slot and the inner side slot.

11. (Currently Amended) The synchronous reluctance motor according to claim 8, wherein each of the outer side slot and the inner side slot has a space defined between the permanent magnets disposed in the slots and an inner peripheral surface of the slots in the radial direction of the rotor, the space is filled with non-magnetic materials, and the first total magnetic flux ~~amount~~ and second total magnetic flux ~~amount~~ are determined by changing sizes of the space in the radial direction of the rotor.

12. (Withdrawn) A synchronous reluctance motor comprising:

a stator having a predetermined number of toothed stator magnetic pole portions wound by armature coils, and

a rotor rotatably supported at an inner peripheral surface of the stator side and having a plurality of slots for a rotor magnetic pole portion formed to be arranged in a radial direction of the rotor and extending along the inner periphery of the stator with a predetermined interval and extending toward the outer periphery of the rotor,

wherein an outer side permanent magnet and an inner side permanent magnet are disposed in the plurality of slots, each portion in the inner side permanent magnet and the outer side permanent magnet facing each other in the radial direction is magnetized to be different magnetic pole respectively, a first total magnetic flux amount of the outer side permanent magnet is determined to be larger than or equal to a second total magnetic flux amount of the inner side

permanent magnet when a center-line of both the outer side slot and the inner side slot in a circumferential direction of the rotor is located in another center-line of the stator magnetic pole portion in the circumferential direction of the stator, and when the armature coils winding around the stator magnetic pole portions are not electrically fed.

13. **(Withdrawn)** The synchronous reluctance motor according to claim 12, wherein the first total magnetic flux amount and the second total magnetic flux amount are determined by changing shapes and sizes of the outer side permanent magnets and the inner side permanent magnets depending on locations thereof in the radial direction of the rotor.

14. **(Withdrawn)** The synchronous reluctance motor according to claim 12, wherein the outer side permanent magnets and the inner side permanent magnets are constructed of more than one unit permanent magnets uniformly formed in size and shape, the first total magnetic flux amount and second total magnetic flux amount are determined by changing the number of unit permanent magnets disposed in the outer side slot and the inner side slot.

15. **(Withdrawn)** The synchronous reluctance motor according to claim 12, wherein each of the outer side slot and the inner side slot has a space defined between the permanent magnets disposed in the slots and an inner peripheral surface of the slots in the radial direction of the rotor, the space is filled with non-magnetic materials, the first total magnetic flux amount and second total magnetic flux amount are determined by changing sizes of the space in the radial direction of the rotor.

REMARKS

Claims 1-11 are all the claims pending in the application. Claims 12-15 have been withdrawn from consideration.

A substitute Declaration is submitted herewith as required in the last Office Action. The Declaration as previously filed contained a typographical error in the year of the Japanese priority document 2001-084271.

In the last Office Action claims 2-4 and 8-11 were objected to because of informalities. Claims 1-11 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1, 5 and 7 were rejected under 35 U.S.C. § 102(b) as being anticipated by Fratta (US 4,924,130). Claims 2 and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fratti.

Applicant has amended the claims in view of some of the Examiner's objections and rejection under 35 U.S.C. § 112, second paragraph. Applicant submits that these amendments are administrative in nature and do not narrow the claimed subject matter its equivalents.

Objections to the Claims and Rejection under 35 U.S.C. § 112, second paragraph

Applicant has amended the claims to try to clarify the scope of the claim for the Examiner's understanding based on the Examiner's statements in paragraphs 3 and 5 of the Office Action. Applicant respectfully submits that the claims meet the requirements of 35 U.S.C. § 112 and requests that these claims be examined on their merits.

With respect to the claim objections, Applicant thanks the Examiner for his suggestions, and has incorporated many of them. Nonetheless, Applicant submits that the use of "second

predetermined number" recited in claims 3 and 4 (and 5 and 6) is appropriate to distinguish that it is different than the predetermined number recited in claim 1. Applicant respectfully submits that one of ordinary skill in the art with the disclosure of the specification would understand the scope and meaning of the recited predetermined and second predetermined numbers.

With respect to the claim rejections under 35 U.S.C. § 112, Applicant offers the following comments.

a. Claim 1 recites that the slots are formed in a circumferential direction. (see specification, page 7, and also Figure 5 where WR5, WR2, and WS2 are shown circumferentially).

b. In claim 3, the claim has been amended to try to clarify to the Examiner that the two cross points are formed by the outer periphery of the rotor and a center-line of a magnetic flux path between the outer side slot and the inner side slot. Likewise, the description of the second opening angle has been amended for clarification. The Examiner is respectfully referred to page 12, lines 5-21, as well as Figure 5 for an explanation of these cross points and angles.

c. In claims 5 and 6, Applicant amends the claim to use "second predetermined number to distinguish it from the predetermined number recited in claim 1. Note that since claim 5 depends directly from claim 1, the second predetermined number recited in claim 5 and the second predetermined number recited in claim 3 (also directly dependent on claim 1) are not necessarily, and most likely not the same.

d. Claim 8 has been amended to parallel the wording in claim 3. In addition to page 12, as recited above, in general, the Examiner is also referred to page 14, starting at line 20 for an explanation of the features recited in claim 8.

e. The changes to claim 10 are thought to be self-explanatory.

Rejection under 35 U.S.C. 102(b)

The Examiner rejected claims 1, 5 and 7 under 35 U.S.C. § 102(b) as being anticipated by Fratta (US 4,924,130). Further, the Examiner rejected claims 2 and 6 under 35 U.S.C. § 103(a) as being unpatentable over Fratti as reciting features that are obvious design choices. Applicant respectfully submits that the predetermined numbers and their ranges recited in the claim are not obvious design choices. Further, there is no suggestion in Fratta of these ranges. In addition, the Fratta device differs from that the device recited in the claims.

Fratta discloses a reluctance synchronous electric machine whose rotor is of the kind using a magnetically axial segmentation and includes magnetically axial layers of a ferromagnetic material (shown in the Abstract). In Fratta, some permanent magnets M are inserted between the intercalary non-ferromagnetic layers I (see Figure 6). Further, Fratta discloses the width (LL) of the ferromagnetic layers (L) of each magnetic segmentation of the rotor is substantially equal to the pitch (PS) of the stator slots (shown in Claim 1), and the intercalary non-ferromagnetic layers (I) are substantially open towards the magnetic gap (see top portion of the diagram of Figure 7), and the width of the ferromagnetic layers (L), measured at

the magnetic gap is approximately equal to the pitch of the stator slots, measured at the magnetic gap, or to a multiple thereof (shown in Claim 11).

Because the ranges (not suggested in Fratta) recited in the claims provide advantageous operations for the motor of the claimed invention, and the machine disclosed in Fratta is different than the claimed invention, Applicant submits that claims 1, 2, 5,.6, and 7 are allowable over Fratta.

If for any reason the Examiner is unable to allow the application on the next Office Action and feels that an interview would be helpful to resolve any remaining issue, the Examiner is respectfully requested to contact the undersigned attorney for the purpose of arranging such an interview.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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